DRIVER

MAY 1976

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DRIVER

A candid interview with Mario Andretti

KING of the ROAD . . .

.and TRACK

by
Capt LARRY RANDLETT,
USAF

America has produced some of the world's greatest racing drivers: Carroll Shelby, world champion Phil Hill, Dan Gurney, Peter Revson, Mark Donohue, and Mario Andretti. But only one from this list of greats is currently competing, Mario Andretti,

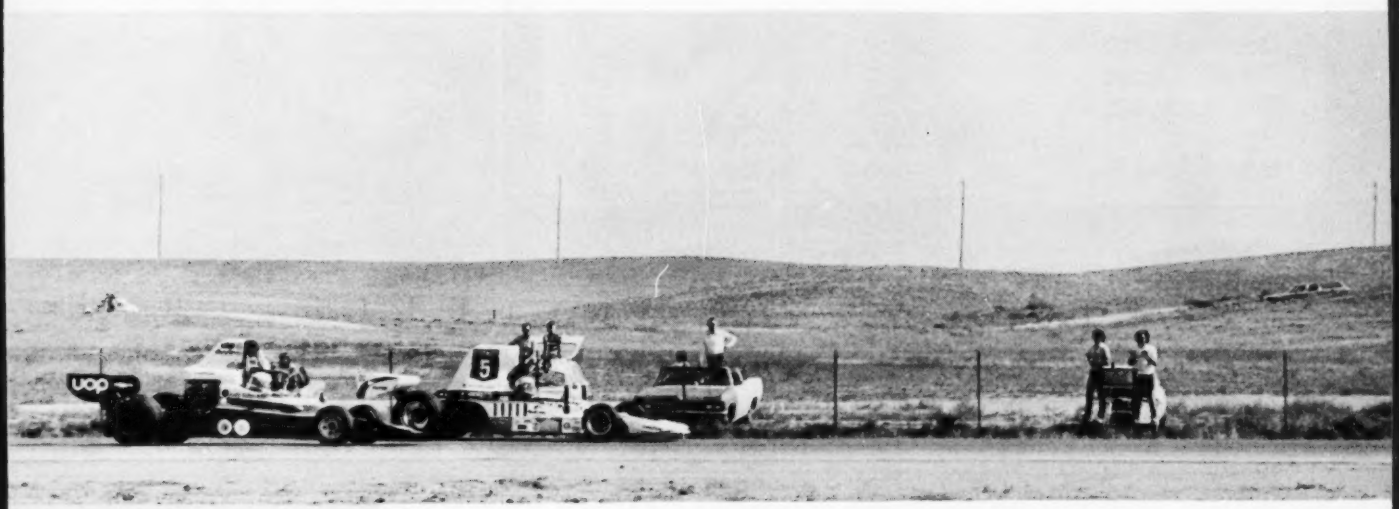
Carroll Shelby went off to build the world champion Cobras, Phil Hill is spending his time restoring vintage automobiles in Santa Monica, Dan Gurney spent the last year building the car and team that won the Indianapolis 500, both Peter Revson and Mark Donohue died at the wheels of race cars. That leaves Mario Andretti as America's only full-time competitor in Formula One Championship racing and one of only five Americans to have won a Grand Prix race.

Mario Andretti has done it all. He has won races in almost every conceivable type of racing car: midgets, dirt trackers, stock cars, sports cars, USAC championship cars (Indy-type), and Formula One Grand Prix racers. He has won the Indy 500 and the United States Auto Club Championship. More recently he has been competing in the Sports Car Club of America Formula 5000 series and twice has been runner-up to Brian Redman. It should be noted that while racing against Redman in his Viceroy Lola, Mario has also been dividing his efforts by testing, developing, and campaigning the Vel's-Parnelli Jones Formula-One car at tracks throughout the world.

It was at the California Grand Prix for Formula 5000 cars that DRIVER had an opportunity to talk to Mario. The race was composed of two heats with the top placers in each heat qualifying for the final feature race. Andretti outpaced his competition in his heat easily, and in the feature race demolished the competition. He finished well ahead of his team-mate, Al Unser, who placed second in an identical Lola.

Throughout the weekend Mario also competed in the International Race of Champions, which is a series of races for those drivers selected from among the best in the world. These select drivers race in Camaros that are prepared for racing to be as identical as possible.

What follows are the unedited thoughts of champion driver Mario Andretti.



Racing wheel-to-wheel at 200 miles an hour can be a tricky business. Here, Mario Andretti passes a slower car in the California Grand Prix for Formula 5000 cars at Ontario International Speedway.

(far left)
Raceday morning, Mario Andretti talks with Teammate Al Unser (left) and Formula One driver Jody Scheckter (right). "The professional," Mario says, "doesn't trust all the other drivers."

(near left)
During practice, Mario discusses the car's handling, the engine response, and race strategy. "At tracks like Riverside you can let it all hang out."

DRIVER: How did you get started in racing?

Andretti: It was something I always wanted to do, and I pursued this desire at every opportunity. When I was legally old enough to drive at the local race track my twin brother, Aldo, and I built a stock car and started racing at local tracks.

continued

DRIVER

THE TRAFFIC SAFETY MAGAZINE FOR THE MILITARY DRIVER

MAY 1976

VOLUME 9 NUMBER 12

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PUBLISHED IN COOPERATION WITH THE DEPARTMENT OF THE ARMY AND THE DEPARTMENT OF THE NAVY

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AFRP 127-1

SUBSCRIPTION—DRIVER is available on subscription for $8.65 per year domestic; $2.20 additional for foreign mailing, 75c per copy, through the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. Changes in subscription mailings should be sent to the above address. Single copies will be sold and back copies will be furnished when available. Use of funds for printing this publication has been approved by Headquarters, United States Air Force, Department of Defense, Washington, D.C. No payment can be made for manuscripts submitted for publication. Contributions are welcomed, as are comments and criticism. Address all correspondence to the Editor, DRIVER Magazine, AFISC/SEDD, Norton AFB, CA 92409.

ATTENTION DEPT OF THE NAVY PERSONNEL: Address all queries concerning distribution to NAVSAFECEN, NAS, NORFOLK, VA 23511, Attn: Safety Publications Dept. All other correspondence will be welcomed by the Editor.

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THE EDITOR SPEAKS

DOUBLE CLUTCH

SPEEDING IS HOW MUCH FASTER?

A lot of guys I know approach a car trip with the idea of pushing their speed all the time. This may mean keeping a watch out for patrolmen while exceeding the limit, "passing every car on the road," and taking unnecessary risks. The question is: What is gained by this? How much time is trimmed off the length of the trip? An experiment in Europe a couple of years ago came up with some interesting results along these lines.

Two identical cars made a test run of almost 1000 miles from Hamburg, Germany, to Rimmini on the Italian Coast. The cars were equipped with instruments that recorded important details concerning the driving. More than half the distance was over autobahn-type routes.

One driver was told to make the best time he could, pass when it was safe, and take the curves at maximum speed. The second driver was told to take it easy, avoid any risk, and move as the traffic flow permitted. Here's what resulted:

The "speeder," pushing himself to the maximum, averaged less than 50 miles-an-hour. He was behind the wheel 20 hours 12 minutes and used the brakes 1339 times including four emergency stops. He passed 2004 other cars and was passed by only 13. The "sensible" driver braked 652 times, and was passed 142 times. His driving time was 20 hours 43 minutes, only 31 minutes slower.

Some West German motor club members who heard this story had some doubts, so they tried a test of their own. They chose an 800-mile run from Cologne, Germany, to the Brenner Pass. In this test, the fast car took 16 hours 52 minutes. The slow one took 21 minutes longer.

In both these tests, besides risking his life, endangering others, and perhaps frazzling his nerves, the fast driver paid a penalty of at least one extra gallon of gas every 100 miles, plus obvious wear on the brakes, tires, suspension, and engine. Is it worth it?

DRIVER: How does someone get started in racing today?

Andretti: That depends on the environment one lives in – what's available, financial means, personal desires. There is no set formula that you could come up with and say, "Follow these guidelines and you will be a successful race car driver." Ask 20 professional drivers today and you'll get 20 different stories on how they got started.

Racing's not like other sports such as football, where you can go to college and make your reputation and proceed to the pros. Motor racing is different and much more expensive and much more difficult. No one is going to give you a sophisticated piece of racing equipment until you have established a favorable reputation, and you will have to develop that reputation with your own equipment. This may mean going in with buddies to pool your finances and build or buy a car. Like I said, there are a thousand-and-one ways to get started. The basic requirement is the burning desire to want to race to win.

DRIVER: Does racing make you a better driver on the street?

Andretti: Yes, most definitely. Driving is my life's work and I believe that I'm a better driver on the street because of my experiences. I'm used to controlling the car under adverse conditions and I'm much more aware of what is happening in the surrounding traffic.

I'm also more sensitive to the handling differences of various cars. If anything happens on the road that would cause the average driver to lose control, I'm confident the skills I've learned on the track would help me through the situation safely.

There are always unforseen events that can happen on the highway, but by the same token I feel I can cope with any situation on the road better than the average driver.

There are, of course, differences between driving on the track and driving on the street. On the road there are

continued

Alone before the race, Mario concentrates on the task ahead.

A

B

C

continued

KING OF THE ROAD . . . AND TRACK

many limits that must be observed. On the track you are trying to achieve the ABSOLUTE limit all the time. You are at the limit of adhesion of the tires and the limit of the cornering potential of the car. These are things you don't (or shouldn't) experience on the highway where you are well within those limits.

It's the discipline of the driver, however, that makes the difference between the racer and the average hotrodder on the road. The racer is disciplined and does not show-off or take unnecessary chances. A professional driver does not relax while he is driving. He is always ready when something happens. His car could blow a tire or suffer some mechanical failure, but he is always ready. He has a sure grip on the wheel and is aware of what is happening around him, and above all he doesn't trust the other drivers.

DRIVER: You are out here racing wheel-to-wheel at 200 miles an hour. Surely you must trust the other drivers.

Andretti: That depends on who it is. There are a limited number of drivers capable of handling these Formula 5000 cars and you race against them week in and week out. You know each other's habits and capabilities – a luxury you don't have on the street, by the way. With some you know you dare make some moves, while with others you know you dare not because their reaction will be unpredictable.

The guys who are the real professionals are the ones who run hard but will not jeopardize safety. They're the ones I respect. They're the pros.

DRIVER: In addition to the Viceroy Lola you're driving this weekend, you are also competing in the International Race of Champions in a Camaro. The cars look very similar to models driven on the street. Is there much difference?

Andretti: These cars are extensively modified production cars. They have some similarity to the street machines, but if you look closely you will find the size of the tires, the size of the brakes, the suspension geometry, and the chassis are all specially designed for racing.

Some of the things done to these cars would help make better and safer street cars. Automobile manufacturers have learned a lot from them about making better street cars. Factories have learned a lot about suspension design from stock car racing, Ford, Chevrolet, Plymouth, Dodge, American Motors – all of them right down the line. I'm sure a lot more will be learned from racing.

The limits you are trying to reach on a race track are way, way beyond what you are trying to do on the road, but it's lovely to have a car on the highway that really handles well because then the margin for error will be that much more forgiving.

DRIVER: If you were asked to modify a street car what changes would you make, if any?

Andretti: Well, the first thing I do on my own car is to stiffen up the shocks. This gives the car much more maneuverability, much more feel. You eliminate a lot of the swaying that can gain momentum. I have seen cars go out of control when they started swaying from side to side. If you have good shock absorbers you have a lot less chance of spinning out and a lot better chance of recovering from a fast maneuver or a driving error.

But that's **all** I do to the car. Manufacturers spend a lot of time engineering their cars to be safe and comfortable on the street, the only compromise they make is with the shock absorbers. I wouldn't touch the car's suspension because the engineers spend a lot of time figuring things out just so, and they know a lot more about that sort of stuff than I do.

DRIVER: You have driven on street courses like Monaco and Long Beach and closed race courses like Riverside and Watkins Glen. Is there any difference beteween these two types of courses?

Andretti: The big difference is the greater amount of concentration required on the street courses. A street layout is very unforgiving because you don't have a shoulder you can run out. They have "run off areas" on the hairpin curves, but on the average corner you can't drop off the shoulder, run a little wider, and get away with it. There is a wall or guardrail right on the edge of the track and you have to drive much more precisely and leave yourself some margin for error. While on a track like Riverside you can let it all hang out because you know it's safe.

Another problem we have on the street course is the changing road surface. You go from macadam to concrete, and we find when you have a race track like that it adds a whole new dimension that both the drivers and mechanics must consider. But that makes the course very challenging. It is also what makes some streets challenging that aren't race courses, especially when they are wet.

DRIVER: Thank you very much, and good luck, Mario!

Andretti: Thank you, and tell your readers I use seat belts.

It was now time for Mario Andretti to go out and win the California Grand Prix. . . .

(left)
When he gets in a new car (in this case the IROC Camaro), Mario first adjusts the seat belts (a), then checks the position of the pedals (b), and finally gets the feel of the steering wheel and shift linkage.

(below)
Being a famous race car driver does have its fringe benefits.

"Tell your readers, I use seat belts."

About the Author

Larry Randlett has written a number of articles for DRIVER including "Racer's Notebook" (Dec. '73), "Superstars of Safety" (Feb '74), and "High Performance Economy" (Jul '74).

Stealing cars and bikes is big business
—protecting them from thieves is your business.

ROYAL RIP-OFF

It takes a thief to catch a thief—or so an old saying goes. But if you're not a thief, the smartest way to beat one is to be aware of him and how he operates.

Law enforcement agencies, insurance companies, and auto clubs will tell you that ripping off vehicles of all kinds is big business today. The chances for recovering—in one piece—your car, pickup truck, motorcycle, van, camper—even your bicycle—are slim, indeed, if you're foolish enough not to protect it.

There are three kinds of thieves—joy riders, amateur hoods, and the pros. If a joy rider snatches your wheels, police will probably find them abandoned, and more than likely damaged, within three or four days. This thief is usually a teenager or young adult.

The world seems to have a surplus of the other two types of thieves. The amateur may grab your vehicle to raise money for the normal cost of living or to support his dope habit. He might even steal a car or bike for his own use. And he's probably a loner. But the pro steals for profit, big profit! He's smooth, usually works on a team with a regional or national theft ring, rips off vehicles by the dozens, and disposes of them for thousands of dollars just as fast. And if he's caught, court statistics show he'll probably beat the rap.

But you're insured, so getting ripped off is no big deal, right? Wrong!

The problems in claiming your vehicle if you're lucky enough to get it back, having it repaired, maybe repainted, maybe going to court, filling out police and insurance forms, and probably being without transportation, require far more effort than preventing a rip-off in the first place. If the vehicle is not recovered, it can be weeks or months before your insurance company can hand you a check for another vehicle.

There's also an intangible reason to protect your wheels: Pride of ownership. What owner of a late-model family car, high-performance sports coupe, or a sharp, 350 cc bike can bear the thought of some punk dismantling or beating it up, then fencing it intact or in pieces for maybe a third of its market value? Especially after all the hassles you went through in picking it out, financing it, finally getting it debugged . . . and all the other TLC you've invested? If this thought alone doesn't infuriate you to action, you're ripe for a rip-off.

Of nearly two million motor vehicles stolen in the United States last year, over 160,000 were taken in car-happy California alone. The California Highway Patrol is spearheading a federally funded, statewide program that's beginning to pay off in increased arrests and recoveries of stolen vehicles. DRIVER therefore called on the CHP and a local police department (City of San Bernardino) for the latest words of wisdom on preventing thefts.

In a nutshell, we learned two things. If you don't read another word of this article, remember these points:

1. If you get ripped off, it undoubtedly will be your own fault.

2. You'll get ripped off because you made a mistake or two:

A. You didn't have your vehicle or component of one (e.g., an engine) inspected by a local LAW ENFORCEMENT AGENCY at the time you bought it to be sure it wasn't hot.

B. You didn't take adequate steps to protect it from thieves after you bought it.

"The average service person is a two-way target for thieves," CHP plain-clothes investigator Lee Grissom told DRIVER. "He's so transient he generally doesn't know state laws and may easily buy a stolen car or bike unless he checks it out first. Then, after he finally does purchase his dream machine, he becomes an easy mark for some rip-off artist who may get on base and drive it right out the front gate."

"The name of the game is to make your wheels hard to steal," interjected San Bernardino Police Detective Jim Bohl. "You'd be amazed at how many people still leave their cars and bikes unlocked, windows rolled down, even the key in the ignition."

You'd have to listen to these two specialists yourself to appreciate just how big the business of stealing wheels has become around the world. So, if you don't want to contribute to some hood's illegal income, read on.

Every legally registered vehicle in the U.S. and most foreign countries has a VIN (vehicle identification number). On autos, this factory serial number is usually located above the instrument panel near the windshield on the manufacturer's permanently inscribed "VIN plate" and is also stamped into the engine block on some vehicles. On most motorcycles, the VIN is stamped into the headstock and there's another serial number on the engine casing.

These numbers must match title and registration papers, or the owner must have legal documents to prove why they don't.

continued

Of 11 motorcycles parked along this heavy log chain anchored in concrete near airmen's quarters at Norton AFB, CA, only the two least expensive bikes on the lot were chained down when this pic was snapped. Since ignition locks are easy to foil, the other nine were fair game for thieves.

Most states have their own computer system which in seconds can identify any vehicle registered in that state and its correct VIN, as well as the models, types, and VINs of all vehicles and parts stolen, missing, or found in that state. In addition, the Department of Justice's National Crime Information Center (NCIC) in Washington has a master file through which any state can obtain VIN data on any stolen vehicle from another state, all within just a few more minutes. And, if necessary, states can contact some foreign nations for VIN information.

HOW NOT TO BUY A HOT VEHICLE

No matter from whom you purchase a used vehicle (one that has been sold

(left)
Two old dirt dogs in the rear are securely chained to this heavy bike rack on an Air Force base, but the big Yamaha OHC-750 in front sits waiting for a thief with a duplicate key for the ignition. A rugged chain and padlock were left neatly wrapped around the luggage rack.

(right)
How not to chain a bike of any kind! The owner of this Harley may have only a front wheel to show for his investment when he returns.

before), insist on seeing all three of these documents, or as many of them as are used in your state:

- Legal title.
- Owner's state registration certificate.
- Signed bill of sale (from previous owner) containing VIN and vehicle description.

Compare the VINs on each document. They must match, or the seller must have separate documents for the non-matching component. If he doesn't, don't buy. Report the matter to police as soon as possible.

Next, insist on the seller accompanying you and the vehicle you want to buy to your local POLICE, SHERIFF, or STATE HIGHWAY PATROL office. There, an officer will be glad to give you an on-the-spot inspection of both the documents and the vehicle and can make a quick computer check of the VIN numbers. *This is the single most important thing you can do to protect yourself against buying hot wheels.*

DO NOT go to your state's department of motor vehicles first, because these departments do not have on-the-spot computer capability to verify VIN numbers. It may take several days in the reregistration process before an illegal VIN comes to light. By then the turkey who sold you the vehicle has flown the coop, and you've become a pigeon!

BEWARE OF DEFECTIVE VIN NUMBERS

It is either against the law or soon will be in most states to "buy, sell, receive, or possess any vehicle or component part thereof on which any VIN number has been removed, defaced, altered, mutilated, or destroyed." So, if you find a defective VIN, don't buy the vehicle. Do report it to local police as soon as possible.

The law also states that if an officer finds you in possession of such a vehicle or component, he SHALL immediately seize it, impound it for public sale or destruction unless you can later prove ownership, and may place you under arrest. You will not be reimbursed for the vehicle if it's found to be stolen, no matter how you acquired it.

Your only recourse is to file a civil suit against the previous owner, if you have a bill of sale, etc. This is a long, costly process, and even if you win, collecting a court judgment can be tough.

continued

VINTAGE CHEVIES TOP AUTO THIEVES' MOST WANTED LIST

Topping the list of "most wanted" vehicles among California auto thieves is not a sleek new sports car or late model Caddy or Continental—it's the Chevrolet Impala, vintage 1963 and older. Of nearly 100,000 passenger cars stolen during 1975 in the golden state, 11½% were Impalas of these model years.

Why their popularity? The California Highway Patrol says they are an "easy mark." Chevies in the early 60s had an ignition switch which, if left in a certain position, could be turned on without a key. Today's drivers are still leaving the ignition in the "rip-off" position!

Pre-1970 model cars occupy all but six of the top 40 most wanted vehicle categories in California with older Fords, VWs, and Chevies dominating the upper brackets. Porsches also rate high because of their 911 engines.

On the motorcycle front, a check by DRIVER showed that any sharp "350" or larger is fair game and a dressed out Harley is the choicest target of all. Of all bikes stolen, only about 50% are recovered.

Bolt cutters make quick work of a non-case hardened security chain which some Harley owner conveniently placed at ground level for this lucky "thief." Applying leverage to cutters is made much more difficult when you string a case-hardened steel chain or cable through a bike's frame, drive chain, and rear wheel about a foot or so above ground level.

Detective Jim Bohl of the San Bernardino, CA Police Department applies stolen property tags to a frame and casing stripped from someone's missing Yamaha. Thieves can steal a bike, replace its serial-numbered frame and headstock with new blank spares costing $150 to $300 at a cycle shop, and stamp in their own "factory numbers" in a couple of hours. The bike is then "legally" re-registered and usually sold at full value through an ad, auction, swap meet, or used cycle lot, or fenced to a middleman.

California Highway Patrol auto and bike theft specialist Lee Grissom examines the altered VIN number on a recovered headstock section from a Kawasaki 400.

(left)
VIN plates, license tags, and legal owner registration papers for 10 junked-out autos were recovered in this brief case by San Bernardino police. They were taken from a man suspected of having stolen some 150 vehicles matching the registration descriptions. He then switched these three items on each auto and "legally" sold it to an unsuspecting buyer. To help police identify a vehicle ripped off in the old "switch game," stamp or etch your initials or social security number in one or more hidden spots not likely to be noticed or painted over by a thief.

Big business is the way San Bernardino Police Secretary Cindy Taylor describes her job in the Auto Theft Bureau. In front of her is an index card file on about 1,300 vehicles stolen in her California city alone last year. Only about 50% of all motorcycles and 80% of the cars and trucks stolen nationwide are ever recovered.

BUYING NEW WHEELS? BE CAREFUL THEY DON'T BURN YOU!

What's worse than smashing up your wheels?

Answer: Discovering that the vehicle you totaled out was stolen before you purchased it. Now, you not only are without transportation but you also have a hot pile of junk on your hands. Don't laugh—it happens almost every day somewhere in the land . . . and abroad, too.

Have you ever thought that the used car you are about to buy may be stolen? Well, before some turkey takes you, we suggest you heed the words of the National Automobile Theft Bureau which has come up with this neat pre-purchase checklist:

■ Buy only from a reputable dealer. If you buy from an individual, check with his bank, finance company, credit union, or insurance company to verify he actually owns the car.

■ Check the car's VIN (vehicle identification number) with your local police, sheriff, or highway patrol (not with your state's motor vehicle department) to make sure the two match and it's not on a "hot list." Law enforcement agencies have immediate access to a nationwide VIN system.

■ Check the paint and interior. Fresh paint on a late model car may indicate cover-up work by auto thieves.

■ Check any inspection stickers and the license plate. These should be up-to-date and issued by the same state.

■ Check the keys and locks. You should get at least one set of original manufacturer's keys. Look at the locks. If they are loose or have scratches near them, it could mean they've been tampered with.

■ Check stickers, personal documents, and personal effects to make sure they don't contradict the seller's story.

■ Ask as many questions as possible. If the seller hesitates or doesn't cooperate with you, walk away. He's probably hiding something.

Two good reasons why owners should install an independent burglar alarm, fuel cutoff, or electrical bypass system in their autos. Thief easily gains entry to locked car by poking wire coat hanger through rubber window molding, then hot-wires the ignition. It takes an experienced thief only a minute or two.

HOW TO PROTECT AGAINST THIEVES

OK, so you got past the inspection and registration process and you're now the proud owner of a new car or bike. Don't relax yet. For one thing, the person who sold it to you probably has a spare key to the ignition and could steal it back and dispose of it before you discover it missing and have time to make a police report.

Here are some things to do to prevent possible theft, not necessarily in the order listed:

■ Make sure the vehicle has a valid VIN and is duly registered with your state motor vehicle department. This is an absolute "must" if, for example, you "crate" a motorcycle or otherwise ship a vehicle into the U.S. from a foreign country. Unless you're buying it through a commercial car dealer, your vehicle probably will bypass the normal registration processes at U.S. ports of entry. If such a vehicle is stolen before it's registered, you will probably be out of luck.

■ Borrow a set of tool and die stamps (your base hobby shop should have one) to print the factory serial number on every visible component, especially on cycles. Bikes are easily dismantled by a thief who then sells the parts at weekend auctions, swap meets, or through newspaper ads. Stamp the numbers where they can be readily seen to discourage would-be thieves, as well as in hidden spots to help police identify and recover them if stolen. DO NOT stamp a number near the factory-assigned frame or engine numbers—this could get you into trouble. Also mark accessories such as radios, stereos, bucket seats, special wheels and hubcaps, windshields, mirrors, etc.

■ Choose the best-lighted, most-traveled streets and lots to park your vehicle. Most thefts occur in residential areas, about half at night.

■ Always lock your car, roll up the windows, and remove the key from the ignition. About half of all autos stolen in this country had the keys left in their ignitions.

■ Install an anti-burglar device somewhere inside your car or truck. While there are some good but relatively expensive devices on the market, the best device is one that you install in a hidden place and that you alone know how to turn off and on. The best device is one that shuts off the fuel supply soon after the car is started, or an independently operated electrical short circuit to sound a loud alarm.

■ If you own a motorcycle, always remove the ignition key. Remember, however, almost anyone can buy a duplicate key and simply drive it away.

■ Always chain your cycle with an extra heavy, case-hardened steel chain or cable. Run the chain through the frame, rear wheel, drive chain, and, if possible, the front wheel, then padlock it with a heavy duty padlock to an immovable object. Keep the chain a foot or so above ground level if possible to make cutting difficult for thieves with bolt cutters.

(DRIVER expresses appreciation for professional guidance and information in the development of this article to California Highway Patrol Officers Lee Grissom and Bob Bedoya, Lt Frank Dare, Jr., and Inspector Walter Pudinski of Zone VIII; Detectives Jim Bohl and Stan Bowman of the Auto Theft Bureau, San Bernardino, CA Police Dept.; and the National Automobile Theft Bureau of Chicago. We also thank the Valley Ramblers Motorcycle Club at Norton AFB for certain photographic assistance.)

PART 3

A DAY IN THE

In Part 2 of *A Day In the Dirt* (Apr '76 issue) we said we'd cover some more of the techniques necessary to get you out in the dirt and get you back again in one piece. Well, here we go . . . this time we'll cover hills, both up and down, and water crossings.

WARNING

Going down hills incorrectly can be hazardous to your health. More about this later . . . first, let's go *up* some hills.

The four basic limitations involved with hillclimbing are: traction, power, stability, and rider ability.

All bikes eventually get to a point where they spin the rear tire, or lose traction. In some cases, reducing the pressure in the rear tire may help. Most bikes come with adjustable rear suspension units that have both up and down damping. If you're troubled with excessive wheelspin and suspect wheel hop as the culprit, have a fellow biker watch as you ride up a hill. Better yet, have the friend ride your bike and you watch. Excess wheel hop can sometimes be cured by compressing or stiffening the shocks.

Another cause of poor traction is improper tire selection.

For some reason, trail bike riders seem to think that knobby tires are the hot setup for any and all trail riding . . . not so, friends! Knobbies don't actually work all that well for the majority of trail riding conditions. They are a super poor choice for hard ground, they don't help much in sand, and they don't help at all in gravel.

Knobbies only help traction in mud or soft soil. On a hard-packed surface they can cause you to lose up to 30% of your traction.

Nothing can be more discouraging to a new rider than trying to keep up on a hard surface with a group of riders whose mounts are correctly shod. There is a school of thought that says knobbies are particularly bad on small-displacement machines, those in the neighborhood of 100 cc's, where a part of the riding is done on hard or rocky ground. In this situation, the tiddler engines are kept on the boil by letting the rear wheel spin in hard going. When a free spinning knobby meets a solid resistance, like a hidden rock or tree root, the knobby tends to get an instant grip and UP goes the front wheel.

When this happens, you have only two options: you either get off the gas, which means the engine is liable to strangle itself, or you take the chance that the offending knob will lose its grip, usually by tearing off large chunks of tread. Either one of these decisions has to be made before the bike comes over on top of you. Both of these solutions can be distasteful, so don't ride

With your weight shifted forward like this, it lessens the bike's tendency to go front-end-high and loop. Loops are hard on the equipment.

Going up hills isn't too hard, if you remember to keep your weight forward over the bars. Feet should be on the pegs to allow bike to handle properly.

DIRT

THINK DIRTy!

This is *not* the way to do a hill! With the ol' bod moved so far back on the seat, the front wheel may come up and over. Also, without standing on the pegs, the bike can't handle correctly.

with knobbies in the first place unless you absolutely have to.

Now and then the traction problem can be solved by riding across the face of the hill. This is how the road builders in Europe cope. Since side-hill riding is difficult at best, may we respectfully submit that if you can't climb the hill by a straight attack, you humbly consider going around it. Also remember that, usually, a hill that is ridden up . . . must also be ridden down!

Power as a limitation is pretty obvious. If you can't keep the rear wheel turning, you're never going to make it to the top of the hill. The answer to the power problem is two-fold: You can hop up the engine, with a resultant loss in economy and reliability, or you can regear the machine.

This last method is usually the best and cheapest way to more available power. You can install a smaller countershaft (transmission output) sprocket, or a large rear sprocket. Most riders opt for the larger rear sprocket. Even a change of 15 or 20% will make the difference between your machine being

continued

When you get almost to the top of the hill, don't forget to get off the gas! Wheelies have their place, but not at the top of a hill where you can't see what's ahead. You should have just enough momentum left at the top to throttle back and just barely coast over the crest.

a stone or an out-and-out, stump-pulling hill climber.

STABILITY

There are only a few things to know about stability. In a hill-climbing situation, stability means the inherent desire of the bike to want to loop over . . . in other words, the front wheel comes up and up until it's finally over the back wheel. Even if you're into weight lifting, try to avoid loops.

This looping tendency can be minimized by the rider who puts his weight forward over the bars and stands on the pegs. The weight forward lessens the chances of looping, while standing on the pegs allows lateral stability and lets the bike do its job in the handling department.

Sooner or later, you're probably going to loop the bike. There's a definite procedure to follow in a case like this to avoid damage to your bike and your body.

When the bike starts coming over, close the throttle the moment it becomes apparent the bike is going past the point of no return. Get both feet on the ground as soon as possible and turn the machine to one side or the other . . . the basic theory (there's that word *theory* again!) being to keep the bike from landing upside down on the bars and seat.

Ideally, the bike will land front-tire-first with the two tires in line at right angles to the slope. Even better, is to wind up with the front tire lower on the hill than the rear tire. Anyway, ease the bike to the side, because the more you retard its fall, the easier it will be when it finally comes to rest.

Really, there is no solution to the stability problem short of altering the frame geometry of the machine. You can lengthen the swing arm to help hill climbing performance, but this mod will adversely affect other modes of han-

If you feel that you've passed the point of no return and the bike is gonna loop, cut the throttle and try to swing it sideways so that the front wheel rests at or below the level of the rear wheel. Also, try to arrange it so that you wind up on the uphill side of the bike holding it, not the downhill side pushing it.

dling. Each bike and rider has a maximum slope possible for each to climb . . . when you find your max, obey your better instincts and don't try anything steeper.

THROTTLE USE

One final tip . . . many riders don't really get the most out of their bikes because they misuse the throttle. Cranking the throttle wide open at low engine speed will often result in lowering engine torque. Opening the throttle to the point where the rear wheel spins wildly usually results in a severe loss of forward motivation.

DOWNHILL

Ah, yes, now comes the time when we've got to get medium serious about this riding thing . . . riding up hills is straight-forward, you either make it or you don't . . . but going down, you have several options. You can ride down, bulldog the bike down, find another way down, let the bike go down alone, OR, you and the bike can take turns beating each other to pieces while rolling end-over-end down towards the largest rock or cactus patch in the state. Most dirt riders refer to this as "sky-ground, sky-ground."

continued

Going down hill is easy. Doing it without hurting yourself may be more difficult. Keep the weight on the rear wheel, making it harder to lock, and treat that rear brake *easy*.

Keep your speed as slow as possible. Steep hills have a way of making you go faster than you want to, and you need slow speed so you can control your brake and clutch with more finesse.

We bet Malcom Smith doesn't do this to get up hills! You shouldn't be too proud to accept occasional help though. Actually, they're not helping him up a hill . . . they're pushing him off the edge to teach him to ride downhill. We're told that Harleys push hard with the brakes on!

This is *not* what should happen at a water crossing. If you've checked the stream bed carefully, you can avoid the deep hole in the river that only motorcycles seem to find. If you have ever tried to lift a 230-pound bike out of a cold river, you know the meaning of the word "work."

Going slowly enough to cope with slippery rocks but fast enough to knife the water away from your engine, is the best way to cross that stream. Don't hit the water too fast though, even a foot of water can cause you to endo or at least chip your teeth on the handlebar.

First, let's get one thing straight. There's no shame in walking, or "bulldogging," a bike down a hill. We all do it when the hill gets a tad too steep. The real danger in bulldogging, however, is that you'll lock and slide the front wheel.

It obviously takes less lever pressure to lock a brake when there's no weight on the bike. Locking the front brake usually results in the bike falling over . . . make sure it falls away from you. If it falls away, it's not too dangerous, but it sure is a nuisance to pick up.

Riding downhill is theoretically the opposite of riding up hill, so it follows that the procedure should be reversed. Weight should be back as far as possible, allowing the rear wheel more traction and increasing rear wheel braking potential.

This isn't a hard and fast rule, but usually you'll use the same gear to go down a hill as you used to go up.

Be careful while applying the rear brake on downhill though; you don't want to stall the engine. The fact the engine itself dies isn't too serious, but consider that a dead engine will lock the rear wheel! In the time it takes you to realize the engine is dead and the rear wheel is locked, a side skid will happen before you can pull the clutch in.

Results of a locked wheel range from a hairy slide to utter panic . . . avoid locking that wheel by using a standard in-out compression release. Just pull the release and the engine will turn over and fire, and the wheel won't lock.

The above trick with the compression release is to no avail if you've planted your size 12 bootie on the brake pedal with enough force to leap tall buildings in a single bound. Remember, the word for brake application on hills is: GENTLY!

Those of you who still use a clutch and a dead engine for down hill braking should consider what may happen if you let out the clutch a mite too much. The engine may fire and you'll automatically squeeze the clutch and front brake. Results should be self-explanatory . . . instant endo.

Finally, consider that most hills do not have the same gradient or angle all the way down. Control pressures will vary directly with the slope, so it's important that you keep your speed down to the barest minimum needed for control. On really steep downgrades, it'll be impossible to lose any extra speed you pick up and, unless you're careful, you'll find yourself proceeding downhill at a rate much greater than you desire.

When you are on the far, frayed edge of control, it takes just the slightest increase in speed or the smallest increase in slope angle to put you right on your ear (remember sky-ground?).

WATER CROSSINGS

Unless you own John Norcias' "Aquavarna," water crossings can sometimes pose problems. The least of these is that you'll drown the engine . . . the worst is that you may find the only 12-foot-deep sinkhole in the entire stream.

So, the word from here is *investigate!* We know you automatically check out your riding area before you ride, but sometimes you see a stream and think, "Well, what's a little water?" A negative attitude, that, and not checking out a stream can court real trouble.

Every bike has a maximum depth of water that it can cross, but this measurement can't be made while the machine is at rest. This is because the front wheel causes the water to part and creates a little cavity behind the wheel and in front of the engine. A bike can actually cross a stream where the water is higher than the air intake because of this dry cavity. Of course, you have to motor rather rapidly to do this, so unless you've checked out the stream depth, bottom composition, and fierceness of flow, we don't recommend it.

If the bottom is rocky, chances are the rocks will have slime or other yecch on them. You have to go slow in order not to fall. If you go slow and the water gets into the engine via the carburetor or other means, well . . . if you're lucky, the engine will just die. If you aren't so lucky, you'll bend or break a connecting rod.

Water, as you remember from school, is not compressible, and when a piston tries to compress it, there goes the ball game. Four-stroke drivers should remember that if water gets into the headpipe at the cylinder's exhaust flange, it can flow back and warp exhaust valves.

If you can see the bottom and know it's hard enough and not too slippery, go ahead and ride across. Don't hit the water at speed, because you'll do an endo even if it's only a foot deep.

Experienced riders recommend riding at just above minimum balancing speed, with the scoot in the lowest gear. To keep water out of the ol' hi-tops, ride with your feet on the pegs. We don't advise riding with your feet held handlebar high though. One small rock on the bottom of the stream and your day's ruined.

If you're crossing a stream and you get that sinking feeling as your front end begins to drop out of sight, all you can do is pull back on the bars, grab a handful of throttle, and hope to wheelie out. It doesn't always work. If you study streams before riding them you'll lessen the chances of having to ask Fred the Squid and his brother, Crazy Maurice, to help you lift 230 lbs of sodden machine out of a very cold batch of water.

EASY DOES IT

"Easy does it" is probably the key phrase to remember when doing hills and water crossings. Steady, consistent riding will get you through while the "berserkers" are on their collective ears.

In the next installment of *Day In the Dirt,* we'll try to cover rocks, logs, and riding the ruts.

Practice is the way to get better, so get out there and do it in the dirt.

DRIVER wishes to thank SSgt Tom Parr, 63rd CESq (MAC), Norton AFB, CA, for his cooperation and assistance in the preparation of this article.

This is the author's latest sprint kart. It is an Invader and is powered by a 100 cc McCulloch. The air dam is for use on fast sports car tracks. Karts like this reach 55 to 65 mph on short ¼-mile road-type courses and will do 100 mph on sports car courses. (Posed photo, so no helmet.)

This single-engined enduro kart will reach 110 mph. C-Open karts, ones with twin engines totaling 16.5 cubic inches displacement, will reach over 150 mph.

Competition driving at a budget price

KARTING

by **Maj F. D. Harvey,** U.S. Army Ordnance Center and School, Aberdeen Proving Ground, MD 21005

The American automobile driver is a curious creature. Despite inadequate and usually superficial driver training, each driver emerges with the feeling that he is an expert. No criticism intended, this attitude usually prevails in the male driver.

Many younger drivers feel a need to prove that they are good drivers and that they have above-average talents to handle a four-wheeled machine. Such proof generally involves some form of competition with other drivers.

Now, everyone knows that racing is against the law on public roads. But the price of actually preparing a car and entering sanctioned competition events is high and often leads people to seek an outlet through illegal racing on the streets and highways.

Is there an option to full-scale racing or illegal competition? Yes. The sport of karting offers an inexpensive competition outlet. It has another advantage: Karting can point up the flaws in one's street-driving ability in a fairly safe manner.

Karting began in the mid-fifties with rather primitive machines – lawn mower or chain saw engines, crude frames and small industrial tires. The sport grew rapidly until the early sixties, when our national "binge" of spending in all activities allowed the modest sport of karting to wither. However, the economics of the mid-seventies has caused karting to flourish again as a competition sport. (I must point out that the vehicle you see a neighborhood boy riding around in his yard is *not* a racing go-kart. Today's racing karts are sophisticated, special-purpose machines.)

The most inexpensive, and most popular, classes utilize special racing engines developed by the McCulloch Corporation. These little screamers produce 12 to 15 hp while turning up to 14,000 rpm. Weighing only 11 pounds, they have specific power outputs of 2½ hp/cubic inch. This power is transmitted to the rear wheels by a special centrifugal clutch which is sealed in a high-temperature lubricant. The clutches are adjustable as to engagement speed. Exhaust systems are tuned for maximum power.

Probably the biggest improvement in karting, as in other forms of automotive racing, is in the field of tires. Special racing tires, quite similar to the concave, molded slicks of USAC and Formula I racing, give karts the ability to take corners at speeds which generate lateral accelerations in the range of 1.5 Gs.

Karting is divided into two general categories, *sprint* and *enduro*, and into two age groups, *junior* and *senior*. Sprint karts have upright, or nearly upright, seating and are designed toward high maneuverability at relatively low speeds (below 70 mph). Sprint races are usually conducted on one-quarter to one-third mile, road-race type courses which put a premium on cornering ability.

Enduro karts feature a horizontal or "lay down" driving position which improves aerodynamics, permitting higher top speeds (100 to 150 mph).

continued

Note cylinder head temperature gauge in front of steering wheel. Protective clothing prevents minor accidents from becoming serious ones. Serious injuries are almost nonexistent in karting.

Junior drivers awaiting starts on the pre-grid.

Enduro races are conducted on regular sports-car courses (such as Watkins Glen, Daytona, Mid-Ohio, etc.) and emphasize top speed and durability. Some clubs provide a special sprint class at enduro events.

For reasons of safety, junior (those under 16 years old) and senior drivers do not compete against each other. To insure equal competition, each class has weight requirements. These are minimum weights that the driver and kart combination must meet at the end of each event.

Because of the level of equipment development, a driver must be highly skilled to fully utilize the kart's capability. Couple this with the fact that all your competitors have similar machines, with almost identical power-to-weight ratios, and you will find that you will have to really work to prove just how much of an "expert" driver you are. All the thrills, all the skills, and all the tricks you have seen the professional racers use are present in karting. Slipstreaming, late braking, four-wheel drifts, correct apexing of corners, and the mental strain of competition are all there – at a fraction of the cost and risk of injury.

How do you find out more about this sport? First check your telephone book's yellow pages. Look under Karting or Go-Karts. If you don't find anything in the phone book, write to one of these national clubs and ask for the location of tracks in your area:

World Karting Association
Suite 209
5825 Jackman Road
Toledo, OH 43613

International Karting Federation
444 West Foothill Blvd.
Glendora, CA 91740

These karts show that racing is close. It takes only a small mistake to lose several places. Practice, under the guidance of a proficient driver, will help you to avoid such mistakes safely.

TIMELY TOPICS

DAY-GLO CAMELS?

Camel-dodging has become such a common cause of nighttime accidents in the Middle East that something had to be done. The solution was to make camel owners purchase phosphorescent harnesses to make the beasties more visible after dark. Now, if someone can only do something about their breath . . .

In the same vein, those of you going to Iceland and Greenland should be aware that those countries have the same problem, but with reindeer instead of camels. A lot of GMVs and a lot of service people have been bent by impacting one of these 300-pound (+ or −) critters. Take it easy during those long nights in the frozen north.

TOO MUCH GOOP

In the Backyard Mechanic for Jan '76, entitled "Water Pump R&R," we showed a water pump and block with gasket cement applied. We did it so the cement would show up in the black-and-white photos. However, we didn't make it clear that there is way too much cement applied. If you used that much cement, you could have more problems than you started with. Excess cement could get into the cooling system and clog the thermostat, heater, or radiator. It can also cause the bolt torque readings to be incorrect.

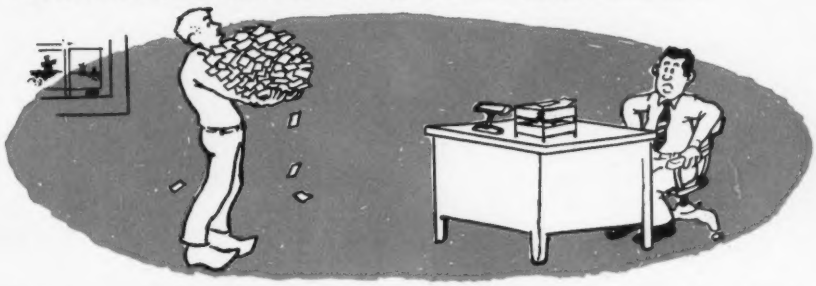
So, remember, apply gasket cement sparingly. Not just to a water pump, but to any part.

THE RIGHT GASOLINE IS IMPORTANT

When selecting gasoline it is important to choose a brand and grade with an octane rating high enough to prevent "engine knock." This phenomenon is one of the most troublesome problems you may encounter with your car. It occurs when a portion of the gas/air mixture explodes prematurely in the cylinders. Knocking decreases power and fuel economy and can damage engine parts if allowed to continue.

Engine knock can be caused by overheating, incorrect timing, an out of adjustment carburetor, or by deposits in the cylinder head or on top of the pistons. A common cause is the use of gasoline with an octane rating too low for your engine.

REFUND PERIOD EXTENDED FOR ESSO NETHERLANDS COUPONS



The refund period for unredeemed ESSO Netherlands gasoline and diesel fuel coupons sold by the Army and Air Force Exchange Service (Europe) has been extended to one year from the expiration date imprinted on the coupon books.

The one-year period applies retroactively to coupon books with an imprinted expiration date of 30 June 1975. These books were previously redeemable for reimbursement only until 31 Oct 1975, but they may now be redeemed for refund until 30 Jun 1976 at all AAFES, Europe POL sales points. Coupons without an imprinted expiration date will be refunded without any time limitation.

BACKYARD MECHANIC REPRINT

We now have a limited number of "Backyard Mechanic" reprints, Volume I, available for our readers. The reprint consists of parts one through 12 of the Backyard Mechanic series originally printed in DRIVER in 1973, and includes maintenance information concerning such subjects as Emission Control Devices, the Battery, and the Vacuum Gauge.

If you would like us to send you a free copy of the reprint, please heed the following:

- Air Force, Army, and Coast Guard members may receive a copy by writing: Editor, DRIVER Magazine, AFISC/SEDD, Norton AFB, CA 92409.
- Department of the Navy personnel may receive a copy by writing NAVSAFECEN, NAS Norfolk, VA 23511, ATTN: Safety Publications Dept.
- Requests will not be filled unless made on a 3x5-sized card (postcards OK), with your return address on the back. No letters, please!
- Allow plenty of time for your reprint to arrive. Requests are honored without regard to rank on an "as received basis," and are processed as an additional duty by the DRIVER staff.

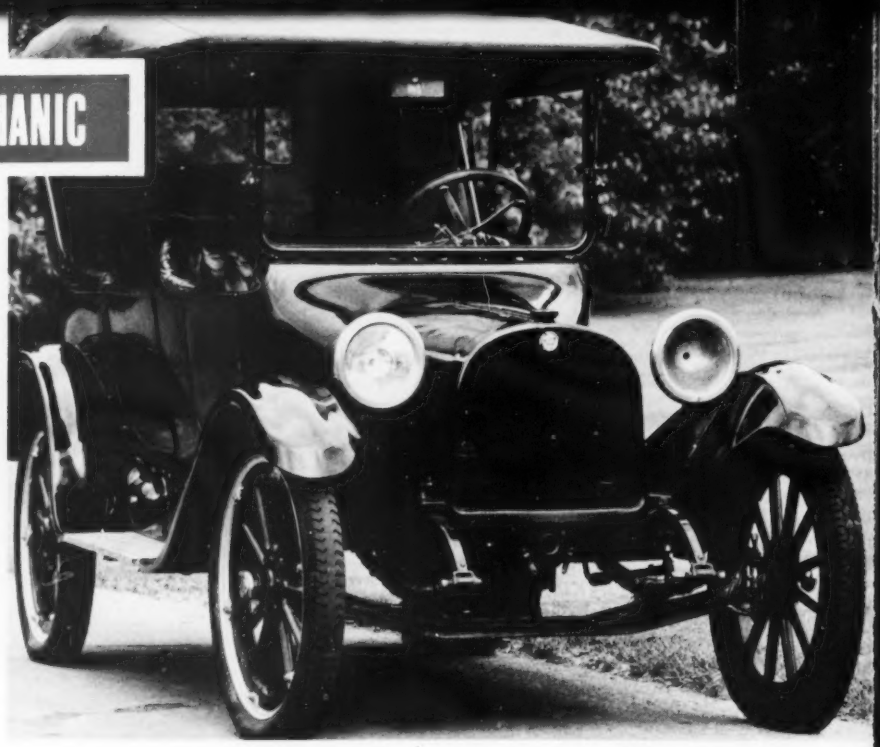
ABOUT MISS DRIVER

In addition to being a Varsity Song Leader, blonde, green-eyed Terri Hart likes to snow ski, water ski, horseback ride, and pursue an interest in poetry. She has held the titles of "Miss Colton Softball America 1975," and "Homecoming Wrestling Queen." The Grand Terrace, California, resident plans to earn a Master's Degree, teach 5th grade, and live at the beach.

Terri told us that she was recently made aware of how important it is to be sure your car is in top running condition. She said, "A month ago I was at a stop sign waiting to make a left-hand turn when I was hit from behind. The accident was caused because a car's brakes failed to catch. It was really a scary experience, and I hope that I'll never be in another accident, but if I should, I'm going to try not to be the cause of it."

THE BACKYARD MECHANIC

Vintage tin is in!



AUTOMOBILE

by
SMSgt Stan Bates
AFISC, Norton AFB, CA

This initial article will attempt to remove some myths and correct some misconceptions about vintage automobile restoration, and encourage you to get involved with "vintage tin." We'll cover the basics of car and restoration category selection. Future articles will be "nuts 'n bolts"-oriented and deal with the actual restoration procedures.

FIRST OF ALL . . .

You need to sit down and make a list that will show exactly what you want to do with your project. Factors to consider are: time and money you can donate to the project, amount of training you possess, availability of work space, access to special equipment, your own abilities, and finally, the exact category of restoration you'll attempt.

Let's outline the various categories of restorations, their advantages and liabilities, and try to determine which way we want to go. Remember, don't let anybody talk you into anything; this project should fit your needs, your desires, and your abilities.

FOUR BASIC CATEGORIES

We feel that the four basic restoration categories are: stock, convenience stock, stock appearing, and customized.

Stock – This category is only for those with extreme patience, and does not include 100% original stock or professional restorations. If you have five to ten thousand dollars kicking around, you don't need this article anyway. This "stock" category means that you use parts that are manufactured currently to the exact stock specs. For example, a reproduction of a 1935 Ford "banjo" steering wheel costs about $65, where an original (original is the key word) banjo steering wheel could cost $250, if you could fine one.

Certainly one of the prime considerations when deciding on a stock restoration is whether the body or parts of the

RESTORATION

(top right)
This is what we mean by the term "basket case." The whole car came to us in baskets of parts. Don't let this picture deter you from the restoration effort . . . it's not as bad as it looks. Most of the bits and pieces are there, and the whole thing only needs de-rusting, reassembly, paint and upholstery.

car you're considering have been "butchered" by a previous owner. Body cancer is another threat to the stock restorer, because plastics (Bondo-type, etc.) are a no-no. If you're going the stock route, the ability to weld and "lead" is essential.

Selection of a vehicle in the "stock" category has a special problem shared only with convenience stock . . . parts availability! If you're doing a "stocker" don't be misled by parts sellers. They may use terms like "mint," "choice," "vintage," or "classic." These terms

continued

When you answer that newspaper ad and see your little jewel for the first time, don't let your emotions run away with you. Stay cool and check everything as closely as possible. What is missing, what needs to be repaired, what needs to be replaced? A little time spent when looking over your prospective purchase can result in huge savings later.

(right)
Check carefully for "Mickey-Moused" or butchered parts. They indicate that the owner didn't care enough to do the job correctly. He may have left out some "extra" parts when he reassembled the engine, and you're the one that will have to make it right.

aren't true descriptions (except perhaps to the seller), and are used primarily to jack up prices. The part is either what you want, or it isn't.

Parts availability may dictate that we can't restore a 1935 Auburn 851 Boattail Speedster, but don't limit yourself to just Fords or Chevies. You may be able to purchase two or three incomplete cars and make one good one from them.

The drive train (engine, transmission and rear end) components must be inspected with great care if the stocker is to acquire reliability. Remember, these are the parts that "work" to get you there and back. Periodic inspections, compression checks, and performance tests will give you advance warnings about premature wear or possible failure.

There are restoration clubs for practically every make and model ever manufactured. These clubs usually publish newsletters that offer tech tips, parts lists, and almost everything you need to make the job easier. A real delight to the vintage tin nut is to have someone else admire his vehicle and offer to help in securing parts. Be ready to share . . . many enthusiasts will exchange or trade parts but would never consider selling them.

From an economic standpoint, "stock" will give you the best return on your investment. On the other hand, it also requires a larger outlay, both in money and time.

Convenience Stock – A category for those who want to appear stock, but will sacrifice authenticity for safety and reliability. This grouping is very popular, and if you plan on doing a lot of driving in your pride and joy, it's the only way to fly.

In this category, the primary change from "stock" is usually hydraulic brakes. Many pre-1940 cars used rod or cable-actuated mechanical brakes. While these brakes were suitable in earlier years, today's traffic conditions really demand hydraulic brakes.

Another safety and convenience item, for both you and other drivers, is the installation of turn signals. These can be "hidden" in many instances. When it gets dark, or the weather goes nasty, turn signals can be a real life saver. "Vintage tin" owners are continually amazed at each others' ingenuity. Would you believe hidden turn signals actuated by a hidden switch?

A sister project that can pay off is the conversion of windshield wipers from vacuum to electrical operation.

Dual outside mirrors, when one or none is stock, are not often noticed even by the trained eyes.

The difficulty of parts locating which plagues the stocker will bother the convenience restorer, too. Selection of the basic machine is more critical if daily use is contemplated, so you may lean more toward a mass produced vehicle rather than "one of 266 made."

Stock Appearance – Stock appearance people hold little belief in the principle that if it looks like a '35 Plymouth, it should be a '35 Plymouth. The external appearances – wheels, body shape, height, trim, lights – may appear stock, but this is where it stops. A peek under the hood reveals a healthy "Hemi," an automatic transmission, and limited-slip differential. The electrical system is 12-volt, and the stereo system is comforting, along with air conditioning. Up front, the stock I-beam axle may now be independent front suspension via Corvair or VW.

Unreal? No, and there are those of us who feel that this is the only way to go. Notice some ways that these machines differ from the customized class.

There aren't any changes to the body shape or size, the fenders don't have flares to contain super-wide gumballs, nor are there 188 louvers punched in the hood.

Many times, the first indication of a "sleeper" or not-so-stock car are a couple of two-inch exhaust pipe tips peeking out from under the rear bumper. Or maybe an extra cooler in front of the radiator. Sometimes it's just the engine idling that gives the show away. Even a practiced eye may sometimes be fooled by 15-inch tires on a machine that originally had 16-inchers.

There is no limit to the amount of time and money that can be put into one of these machines, but the money part comes way down if high-performance parts are left off. A stock, late model, OHV 8-cylinder engine will usually provide all the performance needed, and yet be inexpensive to operate and maintain.

The "basket case" '37 Ford pickup referred to in the March issue of DRIVER is heading in this general direction. The suspension has been modified to include standard hydraulic shocks as a replacement for the original reservoir type. A '39 Ford hydraulic brake system has been installed, complete with the original wheels and 16-inch tires.

Even a quick glance under the hood shows that the V8-60 emblem, on the outside, lies. The tiny flathead engine has been replaced with a flathead of later vintage and slightly larger dimensions. The "new" '49 engine has a ¾ grind (how's that for nostalgia, folks?) cam and kit, and some other small mods that make the "ugly duckling" step right along.

More refinements will come as time and money permit, but as of now it's a reliable and distinctive machine.

Selection of sound basic parts, hours of searching, and three weeks of hard work put this "basket case" on the road, and it's just as reliable and certainly a lot safer than when it was new. The total tab so far, including original chassis, has run about $500. Granted, the cosmetics will come later, but the last five months have been a challenge . . . and a ball.

Look around, there may be even better possibilities where you live.

Customized – This group has the originality to develop a one-of-a-kind machine and yet leave enough stock stuff so that most car buffs can recognize it. There is never any doubt that significant changes have been made to whatever the basic car was.

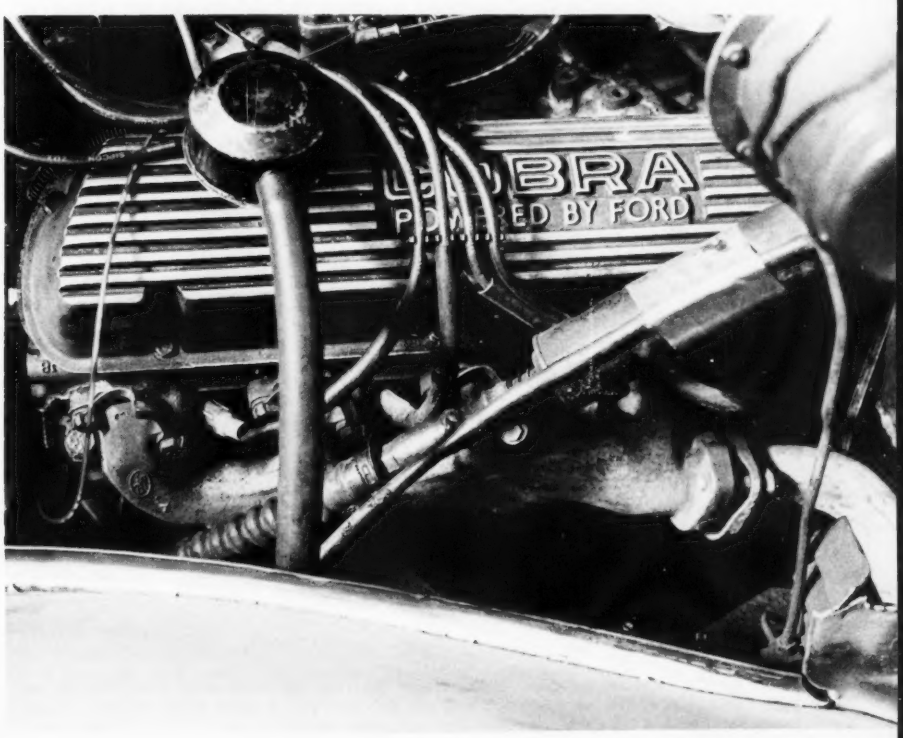
One myth that needs to be put to rest right now is the one that says you can take a junker, remove the fenders and mufflers, raise the rear end, and wind up with a custom rod. The only thing you'll end up with is a custom junker. A *real* custom machine is a thing of beauty to many, and will cause some people's heads to twist around *fast*. The

continued

When you pick out a car for a stock restoration, be sure the one you pick isn't so rare as to not have any parts availability. This early Chevy headlight lens is almost impossible to find today. A glass blower or craftsman can make a set for you, but you can believe they won't come cheap.

(above)
Body rot, or body cancer as some call it, is a real enemy. Since plastic body fillers are a no-no as far as stock restorations are concerned, this damage would probably class the car as appearance stock. This damage *can* be repaired with metal if you're handy with welding and brazing equipment.

(right)
If you'll be doing a stock restoration, check for missing or destroyed body parts. This truck has had lower right part of the firewall destroyed. It would be almost impossible to ever repair this damage well enough to qualify as a good restoration.



Author's '37 Ford pickup as it arrived at his home. When it was wheeled off the trailer, all the tires went flat! Three weeks of hard work and $500 later, truck was working safely and reliably. Late model flathead engine, hydraulic brakes, and new type shocks were biggest changes.

attention given is well-deserved because of the hours and hours of labor and planning that go into the combinations of drive train, styling, suspension, and interior. Sometimes the customized car seems to take on the personality of its builder.

Basic changes are used in any number of ways, and the number of different results are limitless:

The fenders may be flared, widened, or removed. The hood is often converted to a half-hood, or removed entirely.

Modifications to the size of the interior are brought about by chopping (reducing the roof height), or channelling (reducing the body height).

The driver's compartment may be moved aft to allow space for the new engine, or to give the taller driver more leg room.

Suspension mods may include installation of Jaguar or Corvette independent rear suspension. Tilt steering wheels and rack-and-pinion steering setups are not uncommon.

The customizers' modifications usually work together to bring about a change in the car's aerodynamics which results in the car looking like a "wedge."

Take all the modifications, add a superb paint job, a touch of chrome, a little bit of polish, and the custom becomes a show car.

Investments in customs tend to run quite high, so be sure this is the way you want to go before you start. Custom cars may also be a little difficult to sell.

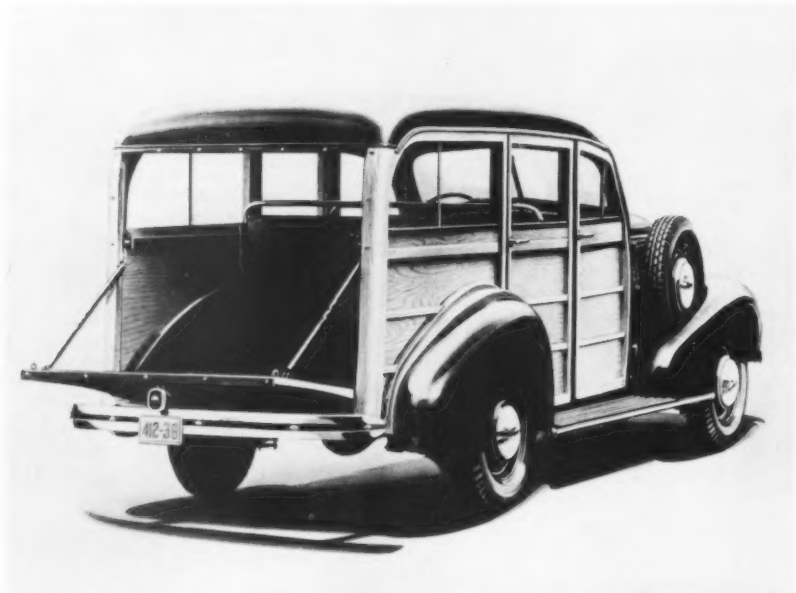
CONFUSED?

We hope we haven't thoroughly confused you with our categories, or dissuaded you from taking a shot at building your own restoration. We know getting started is the hardest part.

Let us add one final word before you make your decision. Be super careful if you consider purchasing an "80% complete" restoration or modified machine. It usually means trouble. It may be that the seller underestimated the cost or availability of parts, or it may be that he has lost "the fever." Either way, the cost involved to change the car from its present configuration to the one you desire could be prohibitive.

Don't buy a butchered rig if you plan to go the stock route. On the other hand, don't pay an extra $500 for a cherry unit if you're going to make a custom out of it.

In coming issues, we'll explore the nuts and bolts of restoration. It's a rewarding hobby, both emotionally and financially, and it can provide you with a safe, reliable car that you can really point to with pride and say, "Hey, I built that!"



Don't ignore "special interest" cars. These cars are not considered true classics, but their restoration is just as much fun and will still give you a good return on your investment. Pictured is a '39 Chevy "woody" station wagon.

LETTERS TO THE EDITOR

HEADLIGHT FAILURE

The back cover of the Dec '75 issue of DRIVER left out one important step in your list of what to do when your headlights fail. Once you get your foot off the gas pedal, turn ON your Emergency Flasher. You will be able to see enough during each pulse of light to safely steer off the highway. In addition, your flashing lights will point out your presence to oncoming traffic.

TSgt William H. Crane
381 SMW/LGBE
McConnell AFB, KS 67221

In reference to your "Emergency! Headlight Failure" (Dec. '75 DRIVER), before stopping, checking the battery, or sending for help, cycle the bright-dim light switch several times. One side of a dimmer switch can short while the other side still works. Also, if you wash your car's floor be careful not to get water in the dimmer switch. While it's supposedly a sealed unit, water can enter around the terminals and cause headlight failure on either or both low and high filaments. I was enlightened to this fact when the resultant light failure happened at night on a mountain road. I assure you, it's a lesson that sticks, if you live through it!

Mr. John J. Bennett
1323 Third Avenue, N.W.
Great Falls, MT 59404

Thanks for the tips, Bill and John.

UNBUCKLED SEAT BELTS . . .

Let me first say that I have just read your informative magazine for the first and surely not for the last time. I am referring to your section called "Backfire," regarding a letter on seat belts signed from L/Cpl Raeford L. Vernon. Let me tell you about "the seat belt that should have been buckled."

I was involved in a serious head-on collision just a year ago. I was not buckled, nor was anyone in the car. There were four of us altogether. The driver was knocked out and suffered a serious lung collapse, and both legs were crushed. I was in the front passenger side and half-way turned around facing the back seat. Upon impact, I was thrown against the dashboard and the windshield and knocked unconscious. I later found out that I was literally lifted out of the car still in the seat. After several days in the hospital with my right hip completely out of the socket and in traction, I became quite ill. After exploratory surgery the problem was diagnosed as Pancreatitis. From this Pancreatitis, I became a diabetic, complete with insulin, the whole route. I spent almost six months in the hospital, and have suffered numerous times from this, simply from the carelessness of not fastening a simple seat belt.

The couple that were in the back seat received minor concussions and two broken ribs.

I am glad I am able to write about this instead of having people talk about it and me. You can be sure that when I am in a car now, that seat belt is buckled before the car is even started.

Thank you for letting me tell you about it.

Ms Patty Goetz
21-509A Camellia
APO Seattle 98742

DOES DRIVER ENDORSE MOTORCYCLING?

I am continually amazed at the position of your magazine in relation to motorcycling. Over the past few months I have paid particular attention to your articles and especially to what seems an endorsement of motorcycling. Granted, you have safety tips, etc., but I get a very strong feeling that you are soft-pedaling the hazards of motorcycling.

Being the chairman of an orthopedic department I know my entire department is constantly involved in the treatment, evaluation, etc., of motorcycle sequelae. There is no doubt motorcycles add tremendously to the injuries of the young and usually are of a severe and often permanent nature. In line with this, I reviewed TDRL evaluations at this facility over the past year. Over 50% of these were as a result of a motorcycle accident with multiple and permanent injuries. None of these was able to return to duty, and all will be on permanent disability with compensation by the Federal Government.

If I may, I suggest your staff take a look at the statistics and the amount of money that is spent by the U.S. Air Force for compensation for these cases, not to mention the pain, suffering and disability each individual endures. I suggest with an evaluation of these facts that no magazine can indorse or condone motorcycling in the name of safety.

We have numerous regulations concerning the obtaining of permission for parachute jumping, participating in speed events on tracks, etc., but we allow street biking at an ever-increasing rate. It has been my experience that only a very small percentage of injuries result from the trail bikes compared to street bikes, and I agree it is not usually the "fault" of the motorcyclist. However, it makes little difference when you walk around the rest of your life with one short leg, permanent impairments, or partial paralysis, whose fault it was. Always ends up the same: the patient and Uncle Sam loses!

Col. J. F. Richardson, MC
David Grant USAF Medical Center
Travis AFB CA 94535

Endorsement? Not really. What we are trying to do is interest our readers who are into motorcycling to learn to ride properly and in a responsible manner. Motorcycling cannot be banned or ignored. We hope your letter will further alert our readers to the very serious risks they run as motorcycle riders.

SLIPPERY SURFACE TIP

I just read your Jan '76 issue and there is something I would like to pass on about your "Emergency" on the back

continued

Address your letters to:
Editor
DRIVER Magazine
AFISC/SEDD
Norton AFB CA 92409

cover. If you have a "stick shift," push in the clutch when you let off the gas. This will make regaining your rolling traction much quicker and it will be easier to control the car. This works on ice, snow, or water. I know, I've learned this the hard way.

Keep up the good work. DRIVER is very informative. I like it better than most auto mags you buy at the store.

Mr. Dick Strauch
1416 W. Pikes Peak
Colorado Springs, CO 80904

Thanks for the tip, Dick.

"JACKED BACK"—JACKED UP

I think that your magazine is the best magazine around covering the subject of automobile driving, bar none. Your repeated attempts to "set the record straight" concerning various misconceptions about cars and driving characteristics (as well as cycles and riding) are highly commendable.

I especially appreciated the Feb article "Jacked Back." I wanted to make copies of the article and distribute them: to the windshields of vehicles which are suffering under their owner's misconceptions, and to the hospital beds of owners who are suffering the results of not knowing the dangers of jacking the rear end.

How about the poor souls who jack *both the front and rear end up?* What do they possibly hope to gain?

Again, thanks for printing the article, and for publishing such an outstanding magazine.

Lt(jg) Keith E. Murray, USN
Gunner Assistant
USS CONYNGHAM (DDG-17)
FPO New York 09501

OVERHEATING TIPS

I have been a driver for over 10 years and would like to pass along some helpful hints about radiator overheating.

Here are the main causes of overheating:

1. Loose or glazed fan belt.
2. Leak in radiator, hoses, or heater core.
3. Rust build-up in radiator.

Corrective action is self-explanatory; however, if you can't correct the problem immediately, just shift to neutral and race the engine two or three times. This should help cool down the radiator by pumping more water through it. Of course, this is only a temporary fix and the problem should be corrected as soon as possible.

SP/6 Larry L. O'Bard, USA
563rd Ordnance Company
APO New York 09353

Right on, Larry, but we should also remind readers that retarded timing or low oil level can cause overheating, too.

HELMET LAWS

Reference the article appearing in your Oct '75 DRIVER entitled, "Mandatory Helmet Law Not Fair." Your statement, "DRIVER readers wear helmets and use seat belts because they believe in them regardless of the arguments and debate" is true to a great extent. However, I would like to make it clear that those of us who oppose helmet laws are not against helmets; we are against helmet *laws*. When I ride a motorcycle, my objective is to enjoy it without getting involved in an accident. If I accomplish this, I do not need a helmet.

Evel Knievel is a helmet law supporter, and he thinks anyone is crazy for riding a motorcycle without one. Well, I think he is crazy for trying to jump over a bunch of Greyhound buses with or without a helmet. The point is this: If I thought I was going to need a helmet, I would stay off the motorcycle to begin with. The same type of logic keeps me from smoking.

Helmets will not keep people from becoming a burden on society as long as there are a bunch of Evel Knievels riding motorcycles. I get sick and tired of hearing how great helmet laws are. I'm not trying to keep anyone from wearing helmets and jumping over Greyhound buses if they want to; I just wish people would stop trying to force helmet laws on me!

Mr. Jackson E. Rollins
917 Carmel Parkway
Corpus Christi, TX 78411

If we have given the impression we are interested in forcing helmet laws on everyone, we apologize. Our position is that the use of a helmet will substantially increase your chance for survival in an accident, just as does the wearing of safety belts in an automobile. With motorcycling, however, the odds for having an accident are quite high, particularly for the newer rider. In addition, what would be a minor fender-bender between cars equates to a fatal accident for a motorcyclist. So, we are hopeful that our readers will realize the importance of always using a helmet–with or without laws.

"THINK MOTORCYCLE"

Motorcycle riding, besides being economical and fun, is also an art. Like any form of art it must be learned and understood before anyone can be good at that art.

Imagine that you are riding down the highway with that finely-tuned, throbbing motorcycle under you and the wind in your face. Great! Right?

For the most part, yes. Then you meet that one certain someone that everybody meets sometime or other—"The Other Guy."

What do you do when "The Other Guy" pulls in front of you or drops something off the back end of that truck right in your path? Or, maybe this person changes lanes and doesn't bother to take the time to look and see if you are there or not.

This is the time for you to understand your motorcycle and its limitations along with your own. It's also time for that all important Defensive Driving!

This is why everybody who owns or rides a motorcycle should enroll in a motorcycle Defensive Driving Course at their local command. It is not enough to just understand how to operate the motorcycle but to also understand the motorcycle and yourself as well.

In other words, THINK MOTORCYCLE!

BUCN Stephen Hutchins, USN
Public Affairs Office
NAS Alameda, CA 94501

You're quite right, Steve. The Air Force, by the way, has just put out a new 4-hour motorcycle course which emphasizes accident avoidance. It's called "Motorcycle Challenges" (MM-12) and can be taken by members of **any** *service on a space available basis by making arrangements through the nearest Air Force Base Ground Safety office. If any of you readers has a problem in arranging to take this multimedia course, drop us a line at AFISC/SEG and include your AUTOVON number.*

In addition to this type of classroom instruction, it's vital to get some behind-the-handlebars type assistance from fellow bikers with more experience. This is best arranged through membership in a motorcycle club.

☆U.S. GOVERNMENT PRINTING OFFICE: 1976—683-613/9

MISS DRIVER

TERRI HART

"I just started driving a new car and you'd never believe where the jack and spare are located—under the hood with the engine! Well, I made a point to right away have a practice run at changing a wheel. It's a good thing I learned how to do it in the daylight and not under emergency conditions. Just collapsing the jack to get it out was hard enough, and the instructions in the owner's manual left out a lot of important information.

"Anyway, my message to DRIVER readers applies whether your car is old or new. Have a practice run-through of changing a wheel. You'll avoid a lot of misery if you have to change it some dark night off the road."

ARMED FORCES WEEK

8-15 May 1976

This month we celebrate Armed Forces Week. Military installations everywhere will play host to their local civilian communities, inviting visitors to tour, see displays, and generally get acquainted with what their neighbors in the Armed Forces are doing.

The Air Force marks its 29th birthday this year. We became a separate service in 1947. Since most DRIVER readers aren't that old yet, we thought you might like to see some automobiles that were built that year. 1947 was a great year for the Air Force. And not a bad year for cars!

(right, front cover)
1947 Pontiac Convertible

(left)
1947 Buick Roadmaster Convertible

(below)
1947 Cadillac Coupe

(above)
1947 Chrysler C39N Town and Country Station Wagon

(right)
1947 Nash Ambassador

(below)
1947 Hudson Convertible

1947 Mercury Convertible